SCREENING TOOLS FOR EARLY PREDICTION OF BACTEREMIA IN FEBRILE CHILDREN AGED 3-36MONTHS

ABSTRACT

Background

Bacteremia has often been studied for its implications on morbidity and mortality in a considerable group of children.

Aim and objectives:

The primary aim of the study is to determine the diagnostic accuracy of screening tools like Yale observation scale, Total leucocyte count, Neutrophil lymphocyte ratio, Absolute neutrophil count, Platelet count, Mean Platelet volume, Platelet distribution width, Plateletcrit, Red blood cell distribution width, Quantitative serum C reactive protein values for early prediction of bacteraemia in febrile children aged 3-36months. And secondary objective is to provide data on the prevalence of occult bacteraemia in febrile children aged 3-36months

Methodology:

Study design

Validation of diagnostic tool

Study setting-

Institute Of Child Health and Hospital For Children, Egmore

Study period

January 2018 to August 2018.

Study population-

Inclusion criteria-

All febrile children aged 3-36 months admitted as inpatients with documented temperature >38°C (100.4°F)

Exclusion criteria-

1. Children treated with antibiotics with in preceding 7days
2. Children received immunisation within preceding 48hours
3. Children with immunodeficiency condition or currently on immunosuppressive medication
4. Children with chronic illness that would be altering the standard approach to fever
5. Children with catheter in situ (CVP catheter, uro catheter etc.)
6. Legal guardian unable to give consent

200 admitted patients of age 3 -36 months old who satisfied the inclusion criteria were subjected to study after obtaining written informed consent from their parent. Temperature was documented at presentation followed by application of Yale observation scale scores ,detailed history taking and clinical examination. Blood samples were collected for required tests and for blood culture.

Results

Among the study population,bacteremia was present in 29 samples(14.5%) ,constituted by *Klebsiella* sp (27.58%), *Escherichia coli* (20.68%), MRSA(17.24%), *Pseudomonas* sp (13.79%) *Staphylococcus aureus* (13.79%), *Streptococcus pneumoniae*(3.44%)and *Streptococcus pyogenes* (3.44%). Occult bacteremia was present in 9% of study population. Among all the screening tools, total leucocyte count with cut off of 10,000cells/mm ^{3} (AUC =0.825, 95% CI 0.732 to 0.917),Neutrophil lymphocyte ratio with cut off of 1.45 (AUC =0.898, 95% CI 0.834 to 0.963), Absolute Neutrophil count with cut off of 5895 cells /mm ^{3} (AUC =0.964, 95% CI 0.921 to 1.000), Red blood cell distribution width with cut off of 14.55% (AUC =0.892, 95% CI 0.810 to 0.974) and Quantitative C reactive protein values with cut off of 8mg/dl (AUC =0.863, 95% CI 0.775 to 0.951) presented with good predictive validity in predicting bacteremia in this study population.

Conclusion

In our study , total leucocyte count, Neutrophil lymphocyte ratio, Absolute Neutrophil count, RDW values and Serum CRP values were found to have good predictive validity in predicting bacteremia and hence can be used as early screening tools for suspecting bacteremia in febrile children aged 3-36 months and starting antibiotic therapy, while awaiting for blood culture results.